

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT		1. CONTRACT ID CODE		PAGE 1 OF 3 PAGES	
2. AMENDMENT/MODIFICATION NO. 005		3. EFFECTIVE DATE See Block 16C		4. REQUISITION/PURCHASE REQ. NO.	
5. PROJECT NO. (If applicable)		6. ISSUED BY U.S. Department of Energy National Energy Technology Laboratory 3610 Collins Ferry Road Morgantown, WV 26507-0880		7. ADMINISTERED BY (If other than Item 6)	
CODE		CODE		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State, and ZIP Code) TBD		(✓)		9A. AMENDMENT OF SOLICITATION NO. DE-PS26-01NT41048	
		X		9B. DATED (See Item 11) December 1, 2000	
				10A. MODIFICATION OF CONTRACT/ORDER	
CODE		FACILITY CODE		10B. DATED (See Item 13)	

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required) N/A

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(✓)	A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
	B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
	C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:
	D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

SEE PAGES 2-3 FOR DESCRIPTION

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) Mary S. Gabriele Contracting Officer	
15B. CONTRACTOR/OFFEROR	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA	16C. DATE SIGNED
(Signature of person authorized to sign)		BY <u>Original Signed by Mary S. Gabriele</u> (Signature of Contracting Officer)	

The purpose of this amendment is to extend the receipt date for the first round Comprehensive Applications to April 11, 2001, and revise Area of Interest 1 and Area of Interest 10. The solicitation is amended as follows:

1. The receipt date for Comprehensive Applications for the First Evaluation Period is extended to **April 11, 2001**. Provision 4.2 is deleted in its entirety and replaced with the following:

“4.2 TIME, DATE AND PLACE COMPREHENSIVE APPLICATIONS ARE DUE - MULTIPLE DUE DATES (DEC 1999)”

Applications shall be submitted in paper media in sealed envelopes or packages addressed to the office and point of contact specified below. Applications must Be Received at the Following Mailing Address No Later than 2:00 P.M. EST for Each of the Application Due Dates Specified Below:

EVALUATION PERIOD

APPLICATION DUE DATE

** 1
2

April 11, 2001 **
June 12, 2001

APPLICATIONS THAT ARE NOT RECEIVED BY THE FIRST DUE DATE WILL NOT BE RETAINED FOR THE SECOND EVALUATION PERIOD. OFFEROR'S MUST RESUBMIT A PRE-APPLICATION FOR THE SECOND EVALUATION PERIOD.

U. S. Department of Energy
National Energy Technology Laboratory
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3610 Collins Ferry Road
Morgantown, WV 26507-0880
Point of Contact : Lisa A. Kuzniar
Telephone Number: (304) 285-4242
Fax Number: (304) 285-4683
E-Mail Address: lkuzni@netl.doe.gov

EXTERNAL MARKING OF APPLICATIONS

Applications shall be marked with the following information:

- (1) Address of Proposer
- (2) Solicitation Number
- (3) Due Time and Date of Applications
- (4) Point of Contact at Issuing Office”

2. SECTION VI, ATTACHMENT A, AREA OF INTEREST 1 is revised to incorporate the following sentence under Research Objectives for This Solicitation: “***Proposed work must apply to power systems operating on coal or coal-derived fuels.***” The revised area of interest is attached hereto.
3. SECTION VI, ATTACHMENT A, AREA OF INTEREST 10 is revised to delete all occurrences of the term “***ultrasonic***” and replace with the term “***sonic***.” The revised area of interest is attached hereto.
4. All other terms and conditions remain the same and unchanged.

END OF AMENDMENT 005

Area of Interest 1

Power Systems Advanced Research

BACKGROUND

Advanced Research provides the means by which advanced concepts are transformed into future working technologies. Improvement of our energy infrastructure, which includes power plants, power transmission systems, fuel production and transportation systems, co-production of higher value products (such as chemicals), environmental protection and remediation efforts, is dependent on research. This research must produce technologies that meet the performance specifications for hostile operating conditions, economic constraints of advanced industrial applications, and public demands for a cleaner environment, reliability, and low consumer cost.

Advanced Research develops fundamental understandings of relationships among energy processes, their performance requirements, and the environment, including: a) basic information and knowledge needed to bridge the gap between fundamental science and advanced engineering development programs; and b) innovative concepts and ideas that enhance the pace of technology innovation for fossil energy systems. These crosscutting activities involve research having applications in many, if not all, coal and gas power generation and coal fuels technology areas.

OVERALL PROGRAM GOALS

Develop the scientific knowledge base for the development of revolutionary technologies and processes with substantial improvements and advances in power, environmental, and fuel systems, and that will be an integral part of meeting the coal and power systems strategic goals.

RESEARCH OBJECTIVES FOR THIS SOLICITATION

PROPOSED WORK MUST APPLY TO POWER SYSTEMS OPERATING ON COAL OR COAL-DERIVED FUELS.

- Advanced Sensors and Controls
 - Development of contaminant monitoring sensors or techniques, especially those that would facilitate toxics release reporting or rapid source apportionment. Other advanced measurement and analysis techniques that would reduce emissions, increase performance and reliability or reduce maintenance burdens are also of interest. Specific examples include: the development of integrated on-line sampling and analysis systems for monitoring contaminants such as mercury, hydrogen chloride, and other species of interest in advanced power systems operating at high temperatures and pressures.
 - Development of advanced control systems that incorporate such approaches as neural networks, fuzzy logic and modeling to significantly improve the response times relative to current control systems.
- Bioprocessing (Two Closely Interrelated Subprogram Areas)
 - Address environmental challenges associated with coal burning and power plants using biological systems.
 - Develop new methods to promote and accelerate biosequestration of CO₂ from the environment by fostering growth of biological organisms that take up higher levels CO₂ than normal organisms.

- Advanced Materials
 - Cross-cutting research to obtain a fundamental understanding of materials and how they perform in fossil-based process environments and the development of new classes of generic materials that will allow the development of new fossil energy systems or major improvements in existing systems, including development of materials for new systems and capabilities.
 - Research on ceramics (composite structural ceramics, solid state electrolytes, membranes, and ceramic filters), new alloys (aluminides, filters, advanced austenitic and ferritic steels, and coatings and claddings), and corrosion protection. The emphasis is on developing a technology base in the synthesis, processing, life-cycle analysis, and performance characterization of advanced materials.

Area of Interest 10

Sonic Oil Well Stimulation

BACKGROUND

The Oil Well Stimulation Program (OWSP) as part of the Advanced Drilling, Completion, and Stimulation Program is driven by the needs of the domestic industry for more effective, cheaper, well stimulation technology. In response to the Petroleum Technology Transfer Council's (PTTC's) 1999 report on Technological Priorities of Independent Oil and Gas Operators, the OWSP has been targeted for actions with a strong emphasis on technologies to stimulate production in the nation's oil wells.

Producers are working with existing wells and clearly, breakthrough technologies are needed to extend the life of these wells and increase ultimate production from the fields where the technology will be applied. The challenge is to take basic scientific principles and apply them to these wells in an effort to maximize production in a safe and environmentally friendly manner.

RESEARCH OBJECTIVES FOR THIS SOLICITATION

Investigate ***Sonic*** Technology for Oil Well Stimulation and Develop ***Sonic*** Device for Oil Well Stimulation

- Our R&D emphasis through this effort is to develop application of processes that utilize ***sonic*** principles to stimulate additional oil well production in an energy efficient and economical manner. While basic research in this area is encouraged, this solicitation is intended to expedite the application of ***sonic*** technology and promote early deployment and oil field usage. To this intent, the investigation shall include integration of prior research findings, where appropriate.
- The prototype development of a suitable downhole ***sonic*** stimulation device shall be considered as an important element of this research effort.

It is contemplated that experimental research tasks, at a minimum, will achieve:

- Development or improvement of the cost effectiveness of an ***sonic*** oil well stimulation method.
- Development or improvement of laboratory scale experiments/measurements and/or theoretical studies of ***sonic*** oil well stimulation.
- Collection and reduction of experimental or analytical data showing the performance, effectiveness, and significance of the laboratory and theoretical results.
- Development and field test of an ***sonic*** device in an oil well.
- Preparation and delivery of technical reports (quarterly, annual, final) showing the results of the project, including details of all relevant performance characteristics and techniques by which they were calculated.
- Detailed specification of performance characteristics, their technical significance in Oil Well Stimulation systems, their potential economic significance, and the recommendations for further research shall be documented.